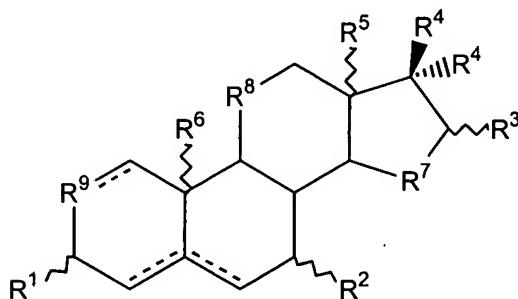


AMENDMENTS TO THE CLAIMS

5 This list of claims replaces the prior version of claims in the application:

Claims 1-21 (canceled)

22. (new) A compound having the structure



10 wherein the dotted lines are optional double bonds;

 R¹ is -H;

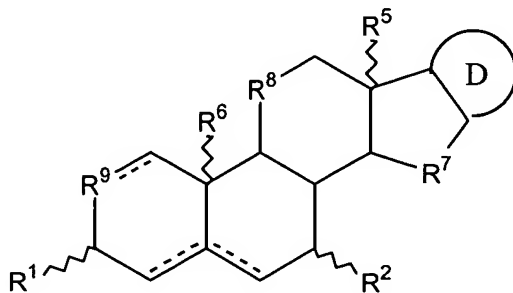
 R² is -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an
15 ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a
 phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a
 peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a
 carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally
20 substituted alkynyl group, an optionally substituted aryl moiety, an optionally
 substituted heteroaryl moiety, an optionally substituted monosaccharide, an
 optionally substituted oligosaccharide or a polymer;

 R³ is -OH, -OR^{PR}, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-
(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a
25 thioester, a phosphoester, a phosphothioester, a phosphonoester, a
 phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a
 peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a

carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted

5 oligosaccharide or a polymer;

R^4 independently are -H, -OH, $-OR^{PR}$, =O, -SH, $-SR^{PR}$, =S, =CH₂, =CH(CH₂)₀₋₁₅CH₃, -N₃, -NH₂, $-N(R^{PR})_2$, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer, provided that both R^4 are not -H, or R^3 and both R^4 together comprise a structure of formula 2



R^5 and R^6 independently are -H, -OH, $-OR^{PR}$, -SH, $-SR^{PR}$, -N₃, -NH₂, $-N(R^{PR})_2$, -O-Si-(R¹³)₃, -CN, -CH₃, -NO₂, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety,

an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer, or,

R^7 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{O}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{S}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, wherein R^{10} independently are $-\text{H}$, $-\text{OH}$, $-\text{OR}^{\text{PR}}$, $=\text{O}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}-(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer;

R^8 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, or R^8 is absent, leaving a 5-membered ring, wherein R^{10} independently are $-\text{H}$, $-\text{OH}$, $-\text{OR}^{\text{PR}}$, $=\text{O}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}-(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer;

R^9 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, or R^9 is absent, leaving a 5-membered ring, wherein R^{10} independently are $-\text{H}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}-(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, a

thioester, an amide, an amino acid, a peptide, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety,
5 an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer;

R^{10} independently are -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a
10 phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted
15 heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide or a polymer;

D is a heterocycle or a 4-, 5-, 6- or 7-membered ring that comprises saturated carbon atoms, wherein 1, 2 or 3 ring carbon atoms of the 4-, 5-, 6- or 7-membered ring are optionally independently substituted with -O-, -S- or -
20 NR^{PR}- or where 1, 2 or 3 hydrogen atoms of the heterocycle or 1 or 2 hydrogen atoms of the 4-, 5-, 6- or 7-membered ring are substituted with -OR^{PR}, -SR^{PR}, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a
25 thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, a halogen, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted
30 oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer, or, one more of the ring carbons are substituted with =O or =S, or D

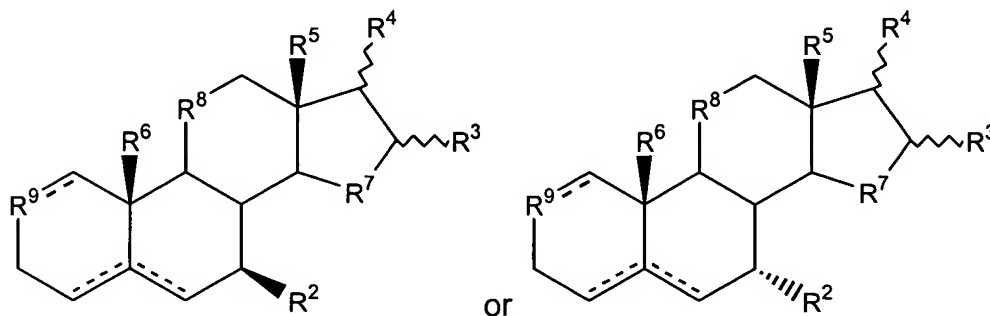
comprises two 5- or 6-membered rings, wherein the rings are fused or are linked by 1 or 2 bonds;

R^{PR} is a protecting group; and

R^{13} independently are C1-C6 alkyl.

5

23. (re-presented - formerly dependent claim No. 2): The compound of claim 1 having the structure



10 24. (re-presented - formerly dependent claim No. 3): The compound of claim 23 wherein the compound is 7 β -hydroxy-16 α -haloandrost-5-ene-17-one, 7 α -hydroxy-16 α -haloandrost-5-ene-17-one, 16 α -haloandrost-5-ene-7,17-dione, 7 β ,17 β -dihydroxy-16 α -haloandrost-5-ene, 7 α ,17 β -dihydroxy-16 α -haloandrost-5-ene, 7 β -hydroxy-16 α -haloandrostane-17-one, 7 α -hydroxy-16 α -haloandrostane-17-one, 16 α -haloandrostane-7,17-dione, 7 β ,17 β -dihydroxy-16 α -haloandrostane, 7 α ,17 β -dihydroxy-16 α -haloandrostane, 7 β -hydroxy-16 α -halo-5 β -androstane-17-one, 7 α -hydroxy-16 α -halo-5 β -androstane-17-one, 16 α -halo-5 β -androstane-7,17-dione, 7 β ,17 β -dihydroxy-16 α -halo-5 β -androstane or 7 α ,17 β -dihydroxy-16 α -halo-5 β -androstane.

20

25. (re-presented - formerly dependent claim No. 4): The compound of claim 3 wherein the compound is 7 β -hydroxy-16 α -fluoroandrost-5-ene-17-one, 7 α -hydroxy-16 α -fluoroandrost-5-ene-17-one, 16 α -fluoroandrost-5-ene-7,17-dione, 7 β ,17 β -dihydroxy-16 α -fluoroandrost-5-ene, 7 α ,17 β -dihydroxy-16 α -fluoroandrost-5-ene, 7 β -hydroxy-16 α -fluoroandrostane-17-one, 7 α -

hydroxy-16 α -fluoroandrostane-17-one, 16 α -fluoroandrostane-7,17-dione,
7 β ,17 β -dihydroxy-16 α -fluoroandrostane or 7 α ,17 β -dihydroxy-16 α -
fluoroandrostane.

5 26. (re-presented - formerly dependent claim No. 5): The compound of
claim 25 wherein the compound is 7 β -hydroxy-16 α -fluoroandrost-5-ene-17-
one.

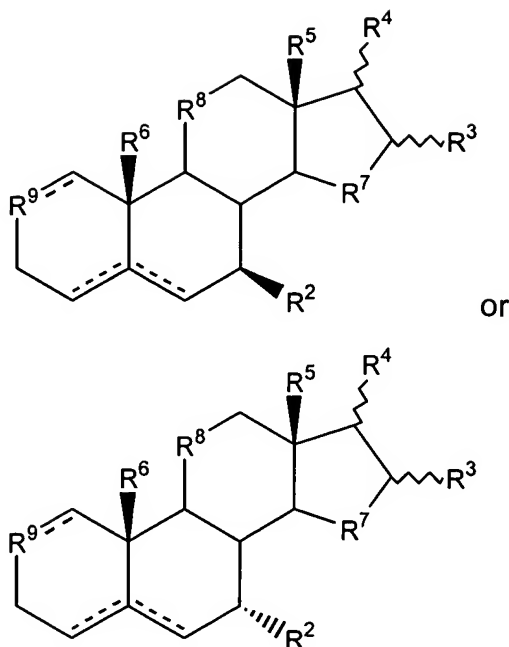
10 27. (re-presented - formerly dependent claim No. 6): The compound of
claim 24 wherein the halogen is bromine.

15 28. (re-presented - formerly dependent claim No. 7): The compound of
claim 27 wherein the compound is 7 β -hydroxy-16 α -bromoandrost-5-ene-17-
one, 7 α -hydroxy-16 α -bromoandrost-5-ene-17-one, 16 α -bromoandrost-5-ene-
7,17-dione, 7 β ,17 β -dihydroxy-16 α -bromoandrost-5-ene, 7 α ,17 β -dihydroxy-
16 α -bromoandrost-5-ene, 7 β -hydroxy-16 α -bromoandrostane-17-one, 7 α -
hydroxy-16 α -bromoandrostane-17-one, 16 α -bromoandrostane-7,17-dione,
7 β ,17 β -dihydroxy-16 α -bromoandrostane or 7 α ,17 β -dihydroxy-16 α -
bromoandrostane.

20

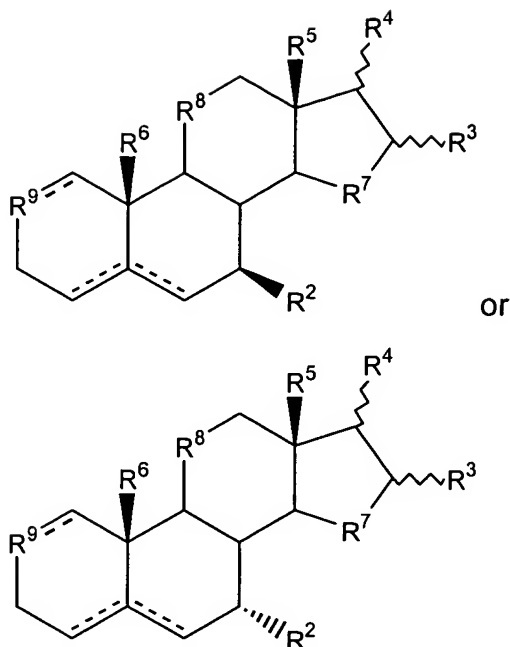
29. (re-presented - formerly dependent claim No. 8): A formulation
comprising one or more excipients and a compound of claim 22.

25 30. (new): The formulation of claim 8 wherein the compound has the
structure



31. (re-presented - formerly dependent claim No. 10): The formulation of claim 8 wherein the compound is 7 β -hydroxy-16 α -fluoroandrost-5-ene-17-one, 7 α -hydroxy-16 α -fluoroandrost-5-ene-17-one, 16 α -fluoroandrost-5-ene-7,17-dione, 7 β ,17 β -dihydroxy-16 α -fluoroandrost-5-ene, 7 α ,17 β -dihydroxy-16 α -fluoroandrost-5-ene, 7 β -hydroxy-16 α -fluoroandrostane-17-one, 7 α -hydroxy-16 α -fluoroandrostane-17-one, 16 α -fluoroandrostane-7,17-dione, 7 β ,17 β -dihydroxy-16 α -fluoroandrostane, 7 α ,17 β -dihydroxy-16 α -fluoroandrostane, 7 β -hydroxy-16 α -bromoandrost-5-ene-17-one, 7 α -hydroxy-16 α -bromoandrost-5-ene-17-one, 16 α -bromoandrost-5-ene-7,17-dione, 7 β ,17 β -dihydroxy-16 α -bromoandrost-5-ene, 7 α ,17 β -dihydroxy-16 α -bromoandrost-5-ene, 7 β -hydroxy-16 α -bromoandrostane-17-one, 7 α -hydroxy-16 α -bromoandrostane-17-one, 16 α -bromoandrostane-7,17-dione, 7 β ,17 β -dihydroxy-16 α -bromoandrostane or 7 α ,17 β -dihydroxy-16 α -bromoandrostane.

32. (new): A method to treat a subject having, or subject to developing, diabetes, hyperglycemia or a hyperlipidemia, comprising administering to the subject an effective amount of a compound having the structure

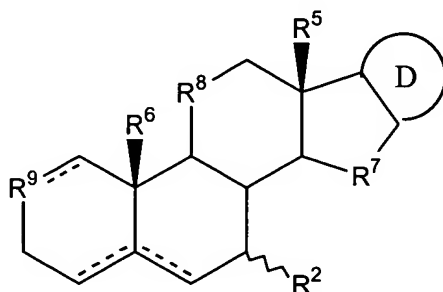


wherein R^2 is $-OH$, $-OR^{PR}$, $=O$, $-SH$, $-SR^{PR}$, $=S$, $=CH_2$, $-N_3$, $-NH_2$, $-N(R^{PR})_2$, $-O-Si-(R^{13})_3$, $-CN$, $-NO_2$, $=NOH$, $=NOC(O)CH_3$, $-C(O)-CH_3$, $-F$, $-Cl$, $-Br$, $-I$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^3 is $-OH$, $-OR^{PR}$, $-SH$, $-SR^{PR}$, $=S$, $=CH_2$, $-N_3$, $-NH_2$, $-N(R^{PR})_2$, $-O-Si-(R^{13})_3$, $-CN$, $-NO_2$, $=NOH$, $=NOC(O)CH_3$, $-C(O)-CH_3$, $-F$, $-Cl$, $-Br$, $-I$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety,

an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^4 is -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, =CH(CH₂)₀₋₁₅CH₃, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer, or R³ and both R⁴ together comprise a structure of formula 2



2;

R⁵ and R⁶ independently are -H, -OH, -OR^{PR}, -SH, -SR^{PR}, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -CH₃, -NO₂, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R⁷ is -CHR¹⁰-, -CHR¹⁰-CHR¹⁰-, -CHR¹⁰-CHR¹⁰-CHR¹⁰-, -CHR¹⁰-O-CHR¹⁰-, -CHR¹⁰-S-CHR¹⁰-, -CHR¹⁰-NR^{PR}-CHR¹⁰-, -O-, -O-CHR¹⁰-, -S-, -S-

CHR¹⁰-, -NR^{PR}- or -NR^{PR}-CHR¹⁰-, wherein R¹⁰ independently are -H, -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R⁸ is -CHR¹⁰-, -CHR¹⁰-CHR¹⁰-, -O-, -O-CHR¹⁰-, -S-, -S-CHR¹⁰-, -NR^{PR}- or -NR^{PR}-CHR¹⁰-, or R⁸ is absent, leaving a 5-membered ring, wherein R¹⁰ independently are -H, -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R⁹ is -CHR¹⁰-, -CHR¹⁰-CHR¹⁰-, -O-, -O-CHR¹⁰-, -S-, -S-CHR¹⁰-, -NR^{PR}- or -NR^{PR}-CHR¹⁰-, or R⁹ is absent, leaving a 5-membered ring, wherein R¹⁰ independently are -H, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, a thioester, an amide, an amino acid, a peptide, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an

optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

D is a heterocycle or a 4-, 5-, 6- or 7-membered ring that comprises
5 saturated carbon atoms, wherein 1, 2 or 3 ring carbon atoms of the 4-, 5-, 6- or 7-membered ring are optionally independently substituted with -O-, -S- or -NR^{PR}- or where 1, 2 or 3 hydrogen atoms of the heterocycle or 1 or 2 hydrogen atoms of the 4-, 5-, 6- or 7-membered ring are substituted with -OR^{PR}, -SR^{PR}, -N(R^{PR})₂, -O-Si(R¹³)₃, -CN, -NO₂, an ester, a thioester, a
10 phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, a halogen, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an
15 optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer, or, one more of the ring carbons are substituted with =O or =S, or D comprises two 5- or 6-membered rings, wherein the rings are fused or are
20 linked by 1 or 2 bonds;

R^{PR} is a protecting group; and

R¹³ independently are C1-C6 alkyl.

33. (re-presented - formerly dependent claim No. 12): The method of
25 claim 32 wherein the compound is 7 β ,17 β -dihydroxy-16 α -haloandrost-5-ene, 7 α ,17 β -dihydroxy-16 α -haloandrost-5-ene, 7 β -hydroxy-16 α -haloandrost-5-ene-17-one, 7 α -hydroxy-16 α -haloandrost-5-ene-17-one, 7 β ,17 β -dihydroxy-16 α -haloandrost-4-ene, 7 β -hydroxy-16 α -haloandrost-4-ene-17-one, 7 α ,17 β -dihydroxy-16 α -haloandrostane, 7 α -hydroxy-16 α -haloandrostane-17-one,
30 7 β ,17 β -dihydroxy-16 α -haloandrostane, 7 β -hydroxy-16 α -haloandrostane-17-one, 7 α ,17 β -dihydroxy-16 α -halo-5 β -androstane, 7 α -hydroxy-16 α -halo-5 β -

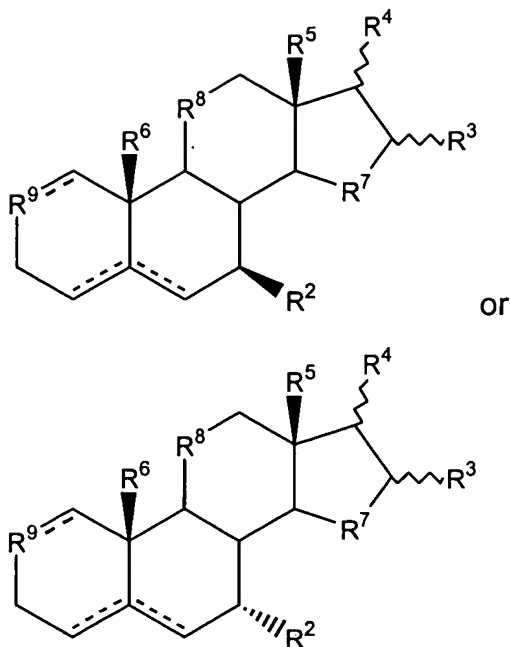
androstane-17-one, 7 β ,17 β -dihydroxy-16 α -halo-5 β -androstane or 7 β -hydroxy-16 α -halo-5 β -androstane-17-one.

34. (re-presented - formerly dependent claim No. 13): The method of
5 claim 33 wherein the compound is 7 β ,17 β -dihydroxy-16 α -fluoroandrost-5-ene,
7 α ,17 β -dihydroxy-16 α -fluoroandrost-5-ene, 7 β -hydroxy-16 α -fluoroandrost-5-
ene-17-one, 7 α -hydroxy-16 α -fluoroandrost-5-ene-17-one, 7 β ,17 β -dihydroxy-
16 α -fluoroandrost-4-ene, 7 β -hydroxy-16 α -fluoroandrost-4-ene-17-one,
7 α ,17 β -dihydroxy-16 α -fluoroandrostane, 7 α -hydroxy-16 α -fluoroandrostane-
10 17-one, 7 β ,17 β -dihydroxy-16 α -fluoroandrostane, 7 β -hydroxy-16 α -
fluoroandrostane-17-one, 7 α ,17 β -dihydroxy-16 α -fluoro-5 β -androstane, 7 α -
hydroxy-16 α -fluoro-5 β -androstane-17-one, 7 β ,17 β -dihydroxy-16 α -fluoro-5 β -
androstane or 7 β -hydroxy-16 α -fluoro-5 β -androstane-17-one.

15 35. (re-presented - formerly dependent claim No. 14): The method of
claim 34 wherein the compound is 7 β -hydroxy-16 α -fluoroandrost-5-ene-17-
one.

20 36. (re-presented - formerly dependent claim No. 15): The method of
claim 11 wherein the hyperlipidemia is hypercholesterolemia.

37. (re-presented - formerly independent claim No. 17): A method to
treat a subject having, or subject to developing, an inflammation condition,
comprising administering to the subject an effective amount of a compound
25 having the structure



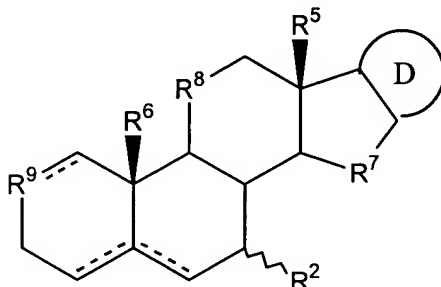
wherein R^2 is -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^3 is -OH, -OR^{PR}, -SH, -SR^{PR}, =S, =CH₂, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety,

an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^4 is -OH, -OR^{PR}, =O, -SH, -SR^{PR}, =S, =CH₂, =CH(CH₂)₀₋₁₅CH₃, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, =NOH, =NOC(O)CH₃, -C(O)-CH₃, -F, -

5 Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted
10 alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer, or R³ and both R⁴ together comprise a structure of formula 2



2;

15 R^5 and R^6 independently are -H, -OH, -OR^{PR}, -SH, -SR^{PR}, -N₃, -NH₂, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -CH₃, -NO₂, -C(O)-CH₃, -F, -Cl, -Br, -I, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a
20 carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer,
25 or,

R^7 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{O}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{S}-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, wherein R^{10} independently are $-\text{H}$, $-\text{OH}$, $-\text{OR}^{\text{PR}}$, $=\text{O}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^8 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, or R^8 is absent, leaving a 5-membered ring, wherein R^{10} independently are $-\text{H}$, $-\text{OH}$, $-\text{OR}^{\text{PR}}$, $=\text{O}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

R^9 is $-\text{CHR}^{10}-$, $-\text{CHR}^{10}-\text{CHR}^{10}-$, $-\text{O}-$, $-\text{O}-\text{CHR}^{10}-$, $-\text{S}-$, $-\text{S}-\text{CHR}^{10}-$, $-\text{NR}^{\text{PR}}-$ or $-\text{NR}^{\text{PR}}-\text{CHR}^{10}-$, or R^9 is absent, leaving a 5-membered ring, wherein R^{10} independently are $-\text{H}$, $-\text{SH}$, $-\text{SR}^{\text{PR}}$, $=\text{S}$, $=\text{CH}_2$, $-\text{N}_3$, $-\text{NH}_2$, $-\text{N}(\text{R}^{\text{PR}})_2$, $-\text{O}-\text{Si}(\text{R}^{13})_3$, $-\text{CN}$, $-\text{NO}_2$, $=\text{NOH}$, $=\text{NOC}(\text{O})\text{CH}_3$, $-\text{C}(\text{O})-\text{CH}_3$, $-\text{F}$, $-\text{Cl}$, $-\text{Br}$, $-\text{I}$, a thioester, an amide, an amino acid, a peptide, a thioether, an acyl group, a

thioacyl group, a carbonate, a carbamate, a thioacetal, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted

5 oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer;

D is a heterocycle or a 4-, 5-, 6- or 7-membered ring that comprises saturated carbon atoms, wherein 1, 2 or 3 ring carbon atoms of the 4-, 5-, 6- or 7-membered ring are optionally independently substituted with -O-, -S- or -NR^{PR}- or where 1, 2 or 3 hydrogen atoms of the heterocycle or 1 or 2

10 hydrogen atoms of the 4-, 5-, 6- or 7-membered ring are substituted with -OR^{PR}, -SR^{PR}, -N(R^{PR})₂, -O-Si-(R¹³)₃, -CN, -NO₂, an ester, a thioester, a phosphoester, a phosphothioester, a phosphonoester, a phosphiniester, a sulfite ester, a sulfate ester, an amide, an amino acid, a peptide, an ether, a thioether, an acyl group, a thioacyl group, a carbonate, a carbamate, a
15 thioacetal, a halogen, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl moiety, an optionally substituted heteroaryl moiety, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a nucleoside, a nucleotide, an oligonucleotide or a polymer,
20 or, one more of the ring carbons are substituted with =O or =S, or D comprises two 5- or 6-membered rings, wherein the rings are fused or are linked by 1 or 2 bonds, provided that the compound is not 3 β -hydroxyandrost-5-ene-17-one, 3 β -hydroxyandrost-5-ene-17-one 3-sulfate or an ester or ether derivative of either compound;

25 R^{PR} is a protecting group;
R¹³ independently are C1-C6 alkyl.

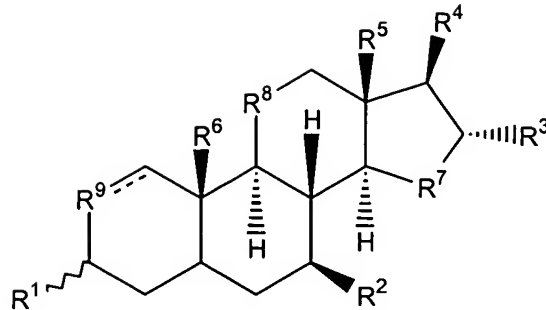
38. (re-presented - formerly dependent claim No. 18): The method of claim 37 wherein the compound is 7 β ,17 β -dihydroxy-16 α -haloandrost-5-ene,
30 7 α ,17 β -dihydroxy-16 α -haloandrost-5-ene, 7 β -hydroxy-16 α -haloandrost-5-ene-17-one, 7 β ,17 β -dihydroxy-16 α -haloandrost-4-ene, 7 β -hydroxy-16 α -

haloandrost-4-ene-17-one, $7\alpha, 17\beta$ -dihydroxy- 16α -haloandrostane, 7α -hydroxy- 16α -haloandrostane-17-one, $7\beta, 17\beta$ -dihydroxy- 16α -haloandrostane, 7β -hydroxy- 16α -haloandrostane-17-one, $7\alpha, 17\beta$ -dihydroxy- 16α -halo-5 β -androstane, 7α -hydroxy- 16α -halo-5 β -androstane-17-one, $7\beta, 17\beta$ -dihydroxy-
5 16α -halo-5 β -androstane or 7β -hydroxy- 16α -halo-5 β -androstane-17-one.

39. (re-presented - formerly dependent claim No. 19): The method of claim 38 wherein the compound is $7\beta, 17\beta$ -dihydroxy- 16α -fluoroandrost-5-ene, $7\alpha, 17\beta$ -dihydroxy- 16α -fluoroandrost-5-ene, 7β -hydroxy- 16α -fluoroandrost-5-ene-17-one, $7\beta, 17\beta$ -dihydroxy- 16α -fluoroandrost-4-ene, 7β -hydroxy- 16α -fluoroandrost-4-ene-17-one, $7\alpha, 17\beta$ -dihydroxy- 16α -fluoroandrostane, 7α -hydroxy- 16α -fluoroandrostane-17-one, $7\beta, 17\beta$ -dihydroxy- 16α -fluoroandrostane, 7β -hydroxy- 16α -fluoroandrostane-17-one, $7\alpha, 17\beta$ -dihydroxy- 16α -fluoro-5 β -androstane, 7α -hydroxy- 16α -fluoro-5 β -androstane-17-one, $7\beta, 17\beta$ -dihydroxy- 16α -fluoro-5 β -androstane or 7β -hydroxy- 16α -fluoro-5 β -androstane-17-one.
10
15

40. (re-presented - formerly dependent claim No. 20): The method of claim 37 wherein the inflammation condition is atopic asthma, allergic respiratory disease, allergic rhinitis, atopic dermatitis, subepithelial fibrosis in airway hyperresponsiveness, chronic sinusitis, perennial allergic rhinitis, allergic bronchopulmonary aspergillosis in cystic fibrosis patients, Crohn's disease, ulcerative colitis, inflammatory bowel disease or fibrosing alveolitis.
20

41. (new): A method to treat, prevent or ameliorate a parasite infection, a bacterial infection, or a symptom thereof, comprising administering to a subject having or susceptible to developing the infection or symptom an effective amount of a compound having the structure
25



wherein,

R¹ is -OH, -SH, an ester, an ether, a carbonate, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a thioester or a thioether;

R² is -H, -OH, -SH, an ester, an ether, a carbonate, a thioester or a thioether;

R³ is -OH, =O, an ester, an ether, a carbonate, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a thioester or a thioether;

R⁴ is -OH, =O, -SH, =S, an ester, an ether, a carbonate, an optionally substituted monosaccharide, an optionally substituted oligosaccharide, a thioester or a thioether;

R⁵ is -CH₃ or -CH₂OH;

R⁶ is -H or -CH₃;

R⁷ is -CH₂- or -CHR¹⁰-;

R⁸ is -CH₂-, -O- or -NH-;

R⁹ is -CH₂-, -CHR¹⁰-, -O- or -NH-; and

R¹⁰ independently are -OH, -SH, an ester, an ether, a carbonate, a thioester, a thioether or a halogen.

42. (new): The method of claim 41, wherein the infection is a bacterial infection, hydrogen is in the α -configuration at the 5-position, R¹ and R³ are -OH, R⁴ is -OH or =O and R⁷ is -CH₂-.

43. (new): The method of claim 42, wherein R² is -H and R⁸ is -CH₂-.

44. (new): The method of claim 43, wherein hydrogen at the 5-position is in the α -configuration, R^1 is -OH in the α -configuration, R_2 is -H, R^3 and R^4 are -OH, R^5 and R^6 are -CH₃, and R^8 and R^9 are -CH₂-.

5

45. (new): The method of claim 43, wherein hydrogen at the 5-position is in the α -configuration, R^1 is -OH in the β -configuration, R_2 is -H, R^3 and R^4 are -OH, R^5 and R^6 are -CH₃, and R^8 and R^9 are -CH₂-.

10

46. (new): The method of claim 41, wherein the infection is a parasite infection and R^1 and R^3 are -OH, R^4 is -OH or =O and R_7 is -CH₂-.

47. (new): The method of claim 46, wherein the subject is a human or a primate.

15

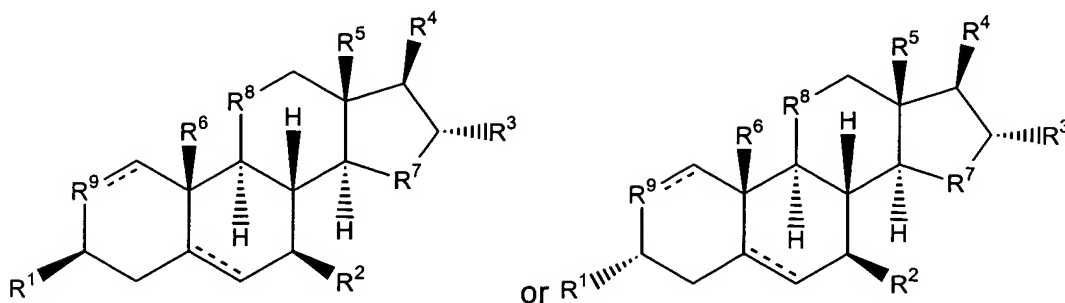
48. (new): The method of claim 47, wherein hydrogen at the 5-position is in the α -configuration, R^1 is -OH in the α -configuration, R_2 is -H, R^3 and R^4 are -OH, R^5 and R^6 are -CH₃, and R^7 and R^8 are -CH₂-.

20

49. (new): The method of claim 48, wherein hydrogen at the 5-position is in the α -configuration, R^1 is -OH in the β -configuration, R_2 is -H, R^3 and R^4 are -OH, R^5 and R^6 are -CH₃, and R^7 and R^8 are -CH₂-.

25

50. (new): A method to treat or ameliorate an inflammation condition in a subject, comprising administering to the subject an effective amount of a compound having the structure



wherein, the dotted lines are optional double bonds;

R¹ is -OH, -SH, an ester, an ether, a thioester or a thioether;

R² is -H, -OH, -SH, an ester, an ether, a thioester or a thioether;

5 R³ is -OH, =O, an ester, an ether, a thioester or a thioether;

R⁴ is -OH, =O, -SH, =S, an ester an ether, a thioester or a thioether;

R⁵ is -CH₃ or -CH₂OH;

R⁶ is -H or -CH₃;

R⁷ is -CH₂- or -CHR¹⁰-;

10 R⁸ is -CH₂-, -O- or -NH-;

R⁹ is -CH₂-, -CHR¹⁰-, -O- or -NH-; and

R¹⁰ independently are -OH, an ester, an ether, -SH, a thioester, a thioether or a halogen.

15 51. (new): A pharmaceutical formulation comprising a compound selected from 16 β -bromo-3 β -hydroxy-5 α -androstane-17-one, 16 β -bromo-3 β ,7 β ,-dihydroxy-5 α -androstane-17-one, 16 β -bromo-3 β ,7 β ,-dihydroxy-5 α -androstane-17-one, 3 β ,7 β ,17 β -trihydroxy-16 β -bromo-5 α -androstane, 3 β ,17 β -dihydroxy-16 β -bromo-5 α -androstane, 3 β ,16 α ,17 β -trihydroxy-5 α -androstane, 20 3 β ,7 α ,-dihydroxyepiandrosterone or 3 β ,7 β ,-dihydroxyepiandrosterone and one or more excipients.

52. (new): The pharmaceutical formulation of claim 51 wherein the 25 pharmaceutical formulation is a parenteral formulation and the one or more excipients are nonaqueous liquid excipients and the pharmaceutical formulation comprises less than about 0.3% v/v water.

53. (new): The pharmaceutical formulation of claim 52 wherein the composition is a parenteral formulation and the compound is 16 β -bromo-3 β -hydroxy-5 α -androstan-17-one or 3 β ,17 β -dihydroxy-16 β -bromo-5 α -
- 5 androstane.